

SANITATION IN PANAMA.

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WHEN the Nicaragua Canal Company inaugurated its work in 1889, so great was the fear of a high death rate among its employés that extraordinary efforts were put forth in the way of prophylaxis. Nor was this fear unjustifiable. The experience encountered on the Isthmus of Panama, where every railway tie represented a death, the demoralising death rate from yellow fever, pernicious remittent malaria, smallpox, &c., not only among canal employés, but the foreign colonists of Panama and Colon, furnished sufficient grounds for apprehension, and yet the death rate along the line of the canal work from climatic diseases was only seven-tenths of 1 per cent., a percentage so small as to stagger those who believed that the diseases of the tropics are far more fatal than those with which they are familiar at home. This low mortality was almost entirely due to the policy of the Canal Company, which placed sanitation in the preliminary stages of the work ahead of all other considerations. Very different was the record established on the Panama route during the French occupation. According to Wallis, smallpox, yellow fever and paludal fevers in their infinite varieties and forms are never absent from this entertropical region, where they are truly endemic. Nelson, after an experience of five years at Panama, gives his approval of the statement long made with reference to the Isthmus, that it is the grave of the European. It has

also been known as the pest house of the tropics and Bigelow says that "here truly life dies and death lives."

In the contracts let by the old Panama Canal Company, it was necessary to import labour from abroad, and in the effort to supply the demand, many labourers were brought from the Island of Jamaica, from the British Antilles and Carthagena, and even from the Mississippi Valley. The sickness and loss of life among these men engaged at work have been variously stated. Of 7,000 men, the Company reckoned that about

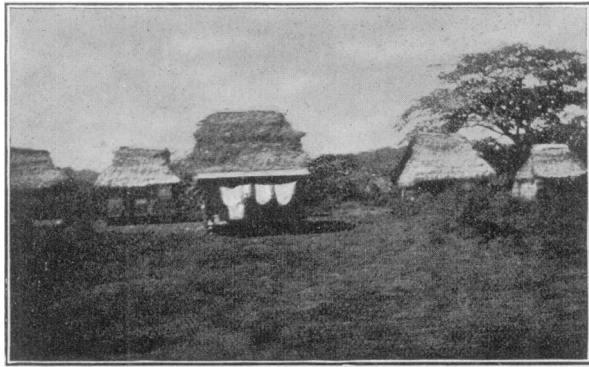


FIG. 1.—THATCHED HUTS OF NATIVES OF PANAMA.

1,000 were always in the hospital. From other sources we learn that the sickness and death-rate among the labourers were very high. In Panama and its vicinity, thirty-seven engineers out of less than 100 are said to have died during the months of March and April, 1882. There was not one single French engineer, who had been able to attend to the work beyond one year and a half, although the contract called for two years. In September, 1884, it is said, the Canal Company buried 664 officers and men. The health conditions, as officially reported by the French authorities, do not show the high mortality from diseases due from climatic causes that had

been indicated by travellers and other independent observers, but Heffenger declares that it was impossible for him to obtain access to the health records of the Panama Canal Company, and that the impression gained by him, after investigating the matter privately was that the public reports were garbled and incorrect; but again it is stated that he was informed by leading physicians of Panama that in the first eleven months, during which preliminary work in the canal was under way,

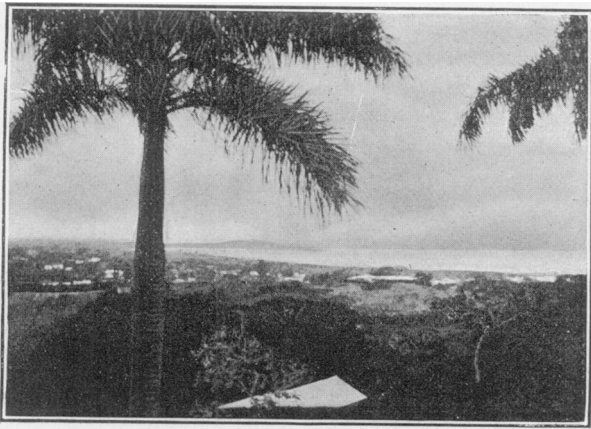


FIG. 2.—VIEW FROM ANCON HOSPITAL.

65 officers and 800 men died of disease. Of labourers brought from the United States during this time, before the end of the second month one-half was on the sick-list, or enfeebled by sickness already sustained. Those of us familiar with the Panama of olden days can well remember the morning and evening death train to famous Monkey Hill, and the foregoing statements as to the fatality of the climate along the Panama route are not at all exaggerated. It has been roughly estimated that in the construction of the Panama Railway, every cross tie represented a human life. So thoroughly was the pro-

fessional mind of America and Europe imbued with these ideas as to the lack of healthfulness of the Panama route that when the first Annual Report of the Medical Department of the Nicaragua Canal was published, a secret commission was sent over from England representing the Colonial Department, and certain large contractors to investigate its truthfulness, and before leaving Nicaragua they called upon the writer, disclosed the purpose of their mission and complimented the Company



FIG. 3.—PRESIDENTIAL PALACE AND HOME OF PRESIDENT AMADOR, PANAMA.

upon the results of its thorough sanitation. The comparative results of the death-rate at Nicaragua of seven-tenths of 1 per cent. as against a 67 per cent. death-rate at Panama was naturally startling.

Then came our experience in Cuba where Colonel Gorgas, the present efficient head of the Panama Road wiped out yellow fever and made Havana a health resort instead of a pest hole. These two experiences of the American people had now thoroughly demonstrated the fact that the tropical zones are not necessarily unhealthy nor are their diseases fatal to

Europeans. The local conditions at Panama first encountered by the American Government were, of course, the same as existed during the French *régime*, that is the reason that so much money and time and labour have been spent in sanitary work on the Isthmus. One cause of disease was the utter lack of rigid quarantine service; therefore the Marine Hospital Service established quarantine stations at Colon and Panama, thereby preventing the importation of yellow fever, smallpox

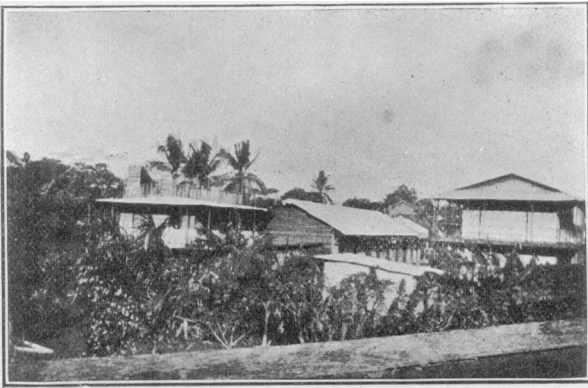


FIG. 4.—PART OF THE BARRACKS AT EMPIRE.

and the bubonic plague. These marine officers were all placed under the direction of Colonel Gorgas.

Another cause of the great sickness that existed during the French *régime* was the condition of filth and rank vegetation that covered the Isthmus from one end of the line to the other. City health board laws were unknown, or poorly practised, in both Panama and Colon. The situation of Colon was so low as not to permit of drainage. The so-called Front Street was paved with boards, and back of this stagnant pools of water filled with filth unmentionable festered under the tropical sun. The mosquito was king of all he surveyed and in his indus-

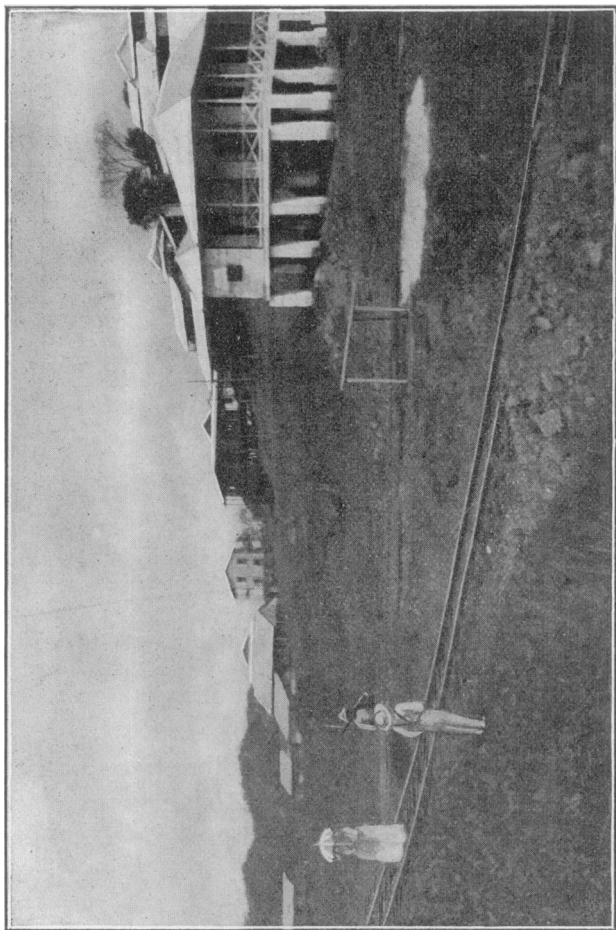


FIG. 5.—THE MARINE BARRACKS AT EMPIRE.

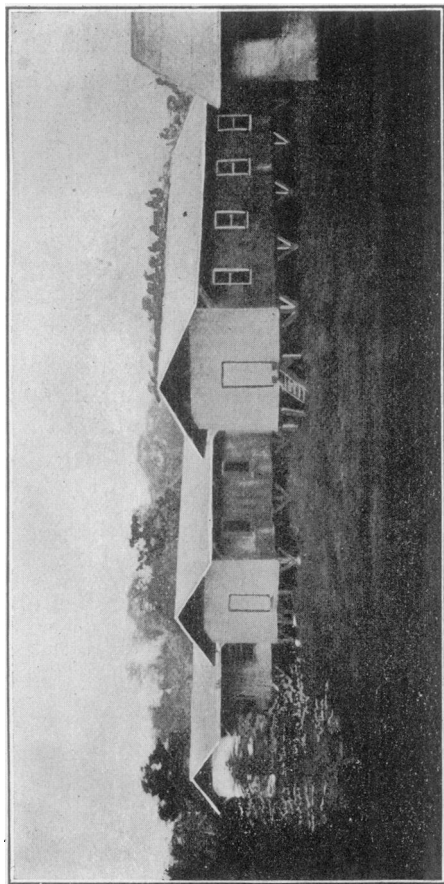


FIG. 6.—LABOURERS' BARRACKS LEFT BY THE FRENCH COMPANY.

trious manner inoculated one individual after another. The streets of Colon and Panama were in many places impassable and in all places unsanitary ; sewerage was an unknown factor and the tremendous fall of tide at Panama, showing an average of 26 feet twice daily, left bare for some distance from the old walls of Panama the coral reefs at very low tide.

Then again, the methods of living of the employés were conducive to ill-health. They were mostly paid stated wages and allowed to buy their own food and live as they pleased. It can be readily understood how under such conditions a small percentage of their money was spent on food and proper lodgings while the larger part was wasted on drink, women and gambling. Enlistment on the sick or hospital roll was not compulsory, and therefore various diseases had a thorough hold on the patients before they came under treatment. This was the condition of affairs which confronted Colonel Gorgas when he assumed control of the sanitary work on the Isthmus of Panama. Truly it was an enormous work that he had to undertake.

At Colon, Front Street was paved, and the streets at Cristobal and on the beach were improved. Houses of labourers in the back streets of Colon were inspected and in many instances reconstructed. In Panama a complete sewage system was installed and the streets throughout the city torn up and repaved. The main sewer discharge was carried out some distance from the city and discharged beyond the Coral Reef in the Bay. In Colon some of the lower streets had been raised a few inches from the level so as to give proper drainage. A street cleaning and garbage cleaning corps was organised, streets were sprinkled, rats were exterminated as far as possible from the city, sanitary inspectors inspected frequently the yards and the rears of houses, native houses were entered, cleaned and whitewashed, mosquito brigades were formed and continued their warfare until the mosquito is now almost a

thing of the past; disinfection brigades, much to the disgust of the natives, entered the houses and cleansed them after the presence of infectious disease, and a sick inspection corps patrolled the city discovering the sick and sending them, whether willing or unwilling, to the hospital.

Then was taken up the inspection of water tanks and water supply. In the old days open water tanks abounded and became breeding spots for mosquitoes. The Comacho and Mount Hope reservoirs were built, and to-day the water supply of both Panama and Cristobal is unsurpassed anywhere in the world. During the year 1906, 809 vessels were inspected and passed at the ports of Ancon, Panama, Colon and Cristobal. Ancon and Panama are on the Pacific side and Colon and Cristobal are on the Caribbean. The very commodious hospital of Ancon, which is beautifully located outside of Panama, was thoroughly overhauled and supplied with mosquito netting for the windows and for the verandahs. On Colon Beach the Colon Hospital was renovated and greatly enlarged, and also protected from mosquitoes. Subsidiary hospitals have been established along the line of work, notably at Miraflores, Bas O Bisko, Empire, Paraiso, Las Cascadas and Gorgona. An ambulance corps service between these receiving hospitals and the main ones at the end of the line has been established on the railway and makes daily trips. In the Island of Toboga, situated well down on the Gulf of Panama, the old French Sanatorium has been remodelled and refurnished and is used as a retreat for convalescents. We all remember the recent criticism in the newspapers of the treatment of Uncle Joe Cannon by Colonel Gorgas, but as physicians we should all take our hats off to him for enforcing, even among the favoured, his just, although strict, sanitary rules in the quarantine service. This somewhat apparent severity exercised by him and his efficient subordinates in every line of sanitary work herein mentioned has borne its fruit, and to-day the

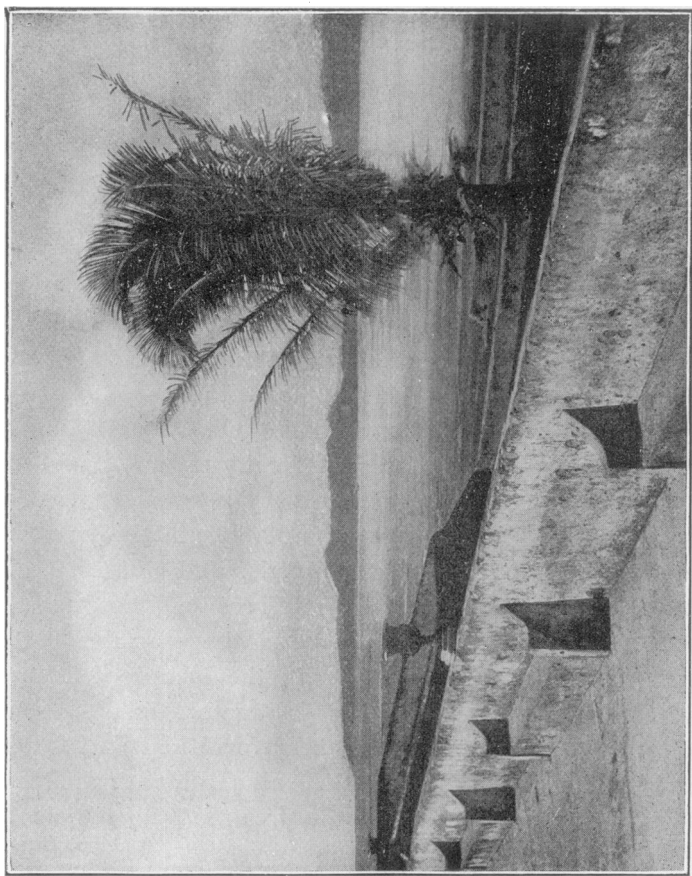


FIG. 7.—COLON. ESPLANADE ON THE OLD SEA WALL LOOKING OUT ON THE BAY.

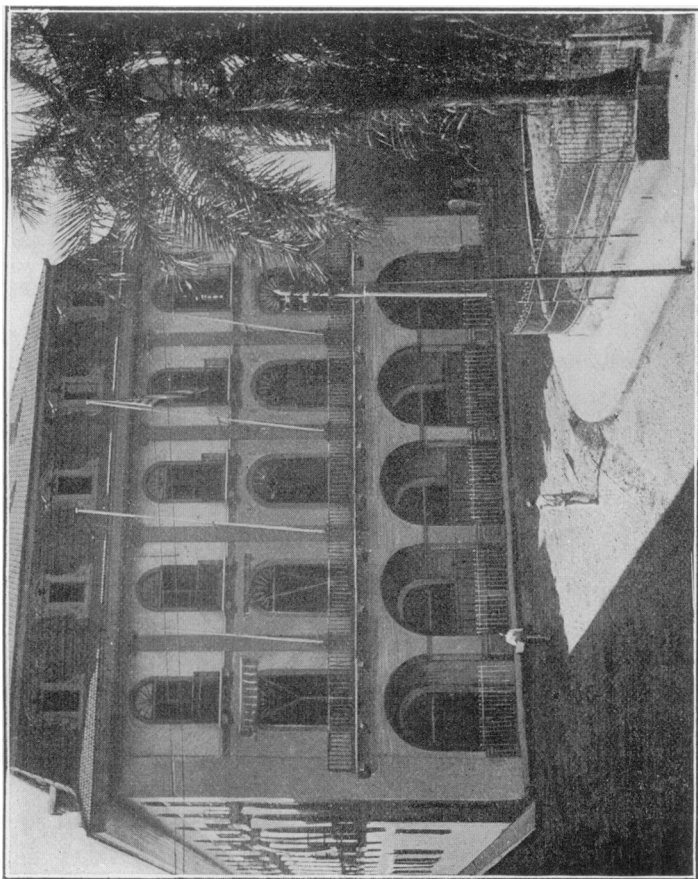


FIG. 8.—CANAL BUILDING AT PANAMA. DEPARTMENT OFFICES.

American people can truly point with pride to the wonderful work accomplished in so short a time, whereby Panama has been made a safe and healthful resort and abiding place, not only for its natives and those of the West Indies, but even for the Anglo-Saxon. Yellow fever is now apparently a thing of the past in this region. Malarial fever in its various manifestations, while still present, is so in a much less marked degree than formerly. Tropical and amoebic dysentery under the improved sanitary conditions and water supply should be rarely met with in the future. An incorrect idea prevails in the States regarding the fatality of the different forms of malarial fever met with in the tropics, and it may astonish many of you when I state that the average duration of an attack of remittent malarial fever was in Nicaragua four and a half days, and in Panama about seven and a half days, in contradistinction to its fourteen days run under similar treatment in the United States. Labourers along the Panama route are subject to all diseases, outside of the infectious class, that they may contract in construction work in our own country, but the bugbear of yellow fever, bubonic plague, smallpox and pernicious malaria have been, we believe, successfully eradicated. Many unauthorised statements are made from time to time by travellers who fly across the Isthmus, fleeing from imaginary disease as a saint would from the devil, and are printed throughout the country as statements of actual facts. I well remember one steamer load of representatives who made a so-called inspection tour of the Isthmus, but carefully got on board their ship before sundown and slipped out each night to sea lest some of these hobgoblins should catch them. I have been told that one of the former high officers of the Government started one day from Panama to Colon, intending to remain there five days and then take a steamer to New York, but on the train crossing the Isthmus he met a fellow passenger, who told him that pernicious malarial



FIG. 9.—VIEW OF HARBOUR AND PART OF THE CITY OF PANAMA.

fever was much more dangerous to the patient than yellow fever, whereupon he held the steamer that was to sail that day, some five or six hours, transacted his business and fled for New York. You all remember a noted writer who spent about eighteen or twenty hours on the Isthmus and then wrote a scathing article regarding its sanitary conditions. I will show you in a few moments a picture of the reservoir supply-

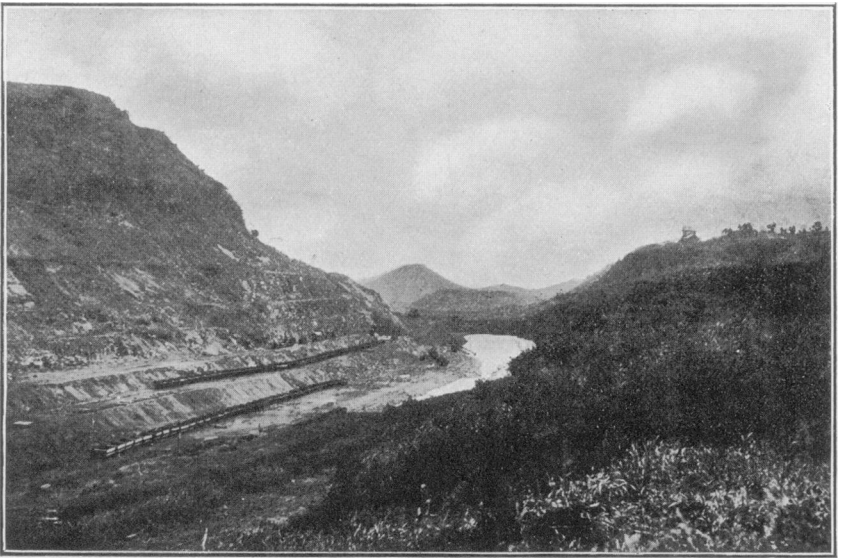


FIG. 10.—THE GREAT CANAL EXCAVATION AT CULEBRA.

ing Colon, which he said did not exist, but which was there at the time of his visit.

In spite of these unqualified denouncements of the sanitary policy of the government and untruths regarding the healthfulness of the Isthmus which we must admit were based upon historical facts of the past, I have no hesitation in stating that to-day America has made of Panama an abiding place for its

citizens far more healthy than many of the Southern States and equally so with New York and our other large cities.

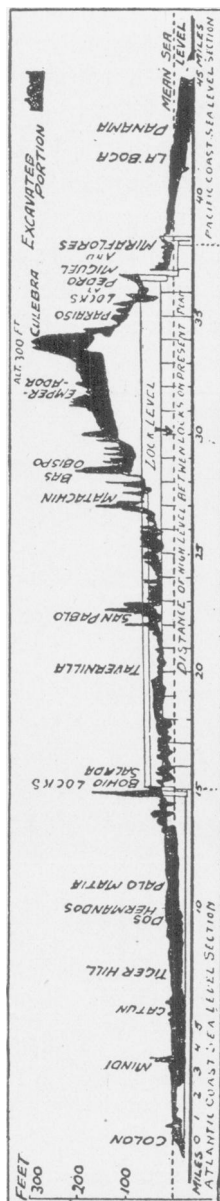
The old travellers to the Isthmus of Panama have vivid and burning recollections of the discomforts of the Grand Central Hotel and one or two other hostelries of smaller size and less repute. Comfortable living quarters for foreigners were unobtainable, or, if at all, in small numbers. There was a tendency for the people to crowd themselves into the termini of the Canal line. The Government has created new towns



FIG. 11.—STEAM SHOVEL AT WORK AT CULEBRA.

along the line of work. They have erected hotels, and at Ancon can be found the Tivoli, of which I will show you pictures, which is as comfortable as any seaside hotel in the United States. These towns have been laid out under sanitary inspection, and the hotels and the additional quarters for married and single men have also been built under strict inspection. They are all screened, as are the hospitals. They are located as far as possible on high ground so that at all

SECTIONAL VIEW OF THE PANAMA CANAL



According to present plans, ships were to be elevated at Pedro Miguel and Miraflores on the Pacific end and at Bohio on the Atlantic end, by great locks, making the level of the water between the locks as shown above and the elevations would have to be excavated to that level. The dotted line shows the line of a sea level canal, which Chief Engineer John F. Wallace seems to favor, and which would require much more excavating and entail much greater expenditure.

times the inmates are in a comparatively cool atmosphere and enjoy the breezes which blow across the Isthmus. Large store houses have been established at Ancon and Cristobal. Cold storage cars have been installed on the railway line, and therefore healthy and palatable food is supplied at a low figure to the consumers.

Finally, so greatly had the conditions been improved by the sanitary methods in vogue that in 1906 only 28 per 1,000 were on the sick list. The ratio of deaths per 1,000 was 41. The highest mortality was among the blacks, in all probability attributable to their low vital resistance. Yellow fever has been apparently exterminated, but of course sporadic cases may slip through the quarantine. (The last case of yellow fever on the Isthmus occurred during the month of May, 1906.) Practically all the quarters of employees, officers and hospitals have been permanently screened. The average number of men employed in the Sanitary Department for the year 1905 was 1,842, for 1906, 2,373. The total number of physicians in the Sanitary Department in February, 1907, were 87. The total number of male nurses, 26, the total number of female nurses, 103. There are at present nine hospitals and one sanitorium in existence. The average daily per capita cost for patients is $33\frac{1}{2}$ cents gold.

DISCUSSION.

Dr. ROLAND G. CURTIN: Dr. Stubbert alluded to the report of Mr. Bigelow, the correspondent. When the politics of such men are understood it is not hard to fathom their motives. As soon as the Canal is built across the Isthmus the Transcontinental Railroads are going to lose almost all the heavy traffic. Hence the fight between President Roosevelt and the Transcontinental roads as shown by the trouble with the engineer. It is important for us to uphold the hands of the President because it is a commercial necessity to the whole world to have this great Canal built. Earthquakes on the Panama route are very slight and infrequent. The arch shown in one of the views shown by Dr. Stubbert is 26 feet across

and almost perfectly flat. This arch has been there for two or three hundred years, and yet there has not been sufficient earthquake shock to dislodge it. If it had been on the "Nicaragua route" it would have been done long ago. The "Panama route" is not located up in the "earthquake belt." An old man who has lived at Colon for over forty years, told me that the story that a person died for every tie laid on the Panama railroad was an exaggeration. Being there so long he could say positively that it was not true like many of the other stories told by correspondents and travellers. While I was in Panama city the U.S. liner "Boston" was off the city, and just after I left eight cases of yellow fever broke out on the vessel. It could not be understood how the fever got on the "Boston" because so much care was exercised on shipboard. I got up one morning to go on an excursion to Tabanna Park, a little way outside of the city of Panama and I saw a lot of the sailors from the "Boston" in bare legs and arms wandering around in the Chinese quarters which was just the place where most of the yellow fever was contracted.

Dr. STUBBERT: In reference to the report of the death rate on the Isthmus, I would like to say that I kept very careful records of the Nicaraguan, Cuban and Panama death rates. The official death rate of Panama has never been tabulated. The death rate on the Isthmus was enormous during the French *régime*. At Nicaragua it was .7 of 1 per cent.